

Report on Selected Ordnance Removal Projects
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Huntsville Division has been involved since 1989 in a swiftly growing ordnance and explosive waste (OEW) remedial action program. These actions fall under the purview of the Defense Environmental Restoration Program (DERP), Base Realignment and Closure, and Superfund. Many small actions have taken place with very little fanfare, while some of the larger projects receive at times daily attention in the news media. This report will address highlights and some unique aspects of five OEW cleanup projects USAEDH has conducted over the last several years.

McCoy Air Force Base (AFB)

The former McCoy AFB is located in Orange County, Florida. McCoy was established as a strategic bomber base and support facility in 1951. Barracks, administrative buildings, hangers, fuel storage tanks, ammunition storage bunkers, and other buildings were built on the installation which had previously been known as Pinecastle Army Airfield.

The AFB was excessed in 1974. A small portion was transferred to the Navy and is operated as the Orlando Naval Training Center Annex, consisting of administrative offices, commissary, family housing, and a golf course. The City of Orlando obtained the largest portion of the property and operates it as Orlando International Airport. A portion of the Orlando property is leased by Walt Disney World. This site contains the former ammunition bunker area and is used for storage of the fireworks used at Disney World.

In September 1992, the Orlando Aviation Authority was trenching for an underground irrigation system on property destined to become a large flower garden. This area is adjacent to the ammunition storage bunker area, within 100 meters of the Navy's nine-hole golf course, within 50 meters of a public highway, and within 500 meters of the airport maintenance hangers. The trenching contractors encountered ordnance and contacted the Orlando Police Department, which contacted Army EOD. The 66th Ordnance Detachment (EOD) responded and removed 18 2.25-inch rockets and 120 .50 caliber cartridges. They determined that additional excavation would be needed to recover the remaining ordnance, and that such an effort was beyond their mission capabilities.

They contacted USAEDH on 16 September 1992. In order to ensure that the excavation could be completed safely, two Huntsville safety specialist with ordnance expertise were dispatched on 25 September to the site. The specialists, working with the trenching contractor, extended the original excavation. They recovered 75 2.25-inch rockets and 250 .50-caliber cartridges from the original trench. A magnetometer survey was conducted of the proposed route of the irrigation system, but no additional ordnance items were encountered.

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Orlando Police had an officer on site during the work, and requested the 66th Ord Det (EOD) respond and pick up the recovered ordnance. The operation was completed over a single weekend.

This project was a good example of quick response with in-house forces to support on-going construction. Although further investigation of the entire area will be needed in the future, the imminent hazard was dealt with promptly with little impact on the property owner's construction schedule.

Duck Navy Target Facility

Duck, NC is just a few miles north of Nags Head and Kill Devil Hill, NC. Duck has the Atlantic Ocean on one side and the Currituck Sound on the west side. This area has thousands of visitors each year.

Duck Navy Target Facility consisted of 200 acres when it was established in 1941. It was used by the Navy until 1972, when 24 acres were transferred to private concerns and the North Carolina Highway Department. The remaining 176 acre tract was transferred to the U.S. Army Corps of Engineers and is used as a Coastal Engineering Research Center, with about 15 personnel stationed there.

The ordnance problem at Duck was brought to Huntsville Division's attention in July 1992, after two children playing in shallow water recovered four 2.75 inch practice rockets and brought them to their residence. The father found the items under his residence and transported one to the nearby Corps of Engineers Research Center. A local Marine EOD Detachment responded and removed the rockets, but public awareness was heightened. A USAEDH safety specialist visited the site in July to determine the extent of the hazard, and a scope of work was developed to conduct a surface clearance. The delivery order under an existing time and materials contract was awarded in December 1992. The work plan was completed and work began in February 1993.

The contractor, EOD Technology, Inc., mobilized on 23 February with a six man team of Unexploded Explosive Ordnance (UXO) specialists. They accomplished the surface clearance of the entire property over twelve working days. The work extended in some areas out into the water to a depth of two feet. USAEDH provided an on-site safety specialist for safety oversight and quality assurance.

Aircraft air-to-ground rockets, practice bombs, aircraft smoke and illumination flares, and small arms were recovered during the operation. Of the 821 items of UXO recovered, 47 items had explosive filler or explosive residue. The 47 items were destroyed by the 18th Ord Det (EOD), Fort Bragg, NC. Over eight tons of UXO related scrap were removed from the site and turned over to a local scrap salvage company.

Again, further action is needed to deal with subsurface ordnance, but once funding was received the imminent hazard was addressed quickly and efficiently. Approximate contract cost for this project was \$100,000.

Buckroe Beach

Huntsville Division has conducted three ordnance clearances at this public beach in Hampton, Virginia, since that city first discovered the ordnance during a beach reclamation project in August 1990. The City pumped sand through a two-mile long dredge line from the Chesapeake Bay and leveled it off with bulldozers to a depth of four feet. When they made their initial find of artillery shells, the City called out local volunteers with their beachcomber metal detectors to locate other shells. They had located and moved 58 artillery shells to a collection point for recovery by local EOD units.

Since the ordnance had been moved by accident from a former military impact area, the site qualified for remediation under the Formerly Used Defense Sites (DERP-FUDS) program. Since the beach was an extremely popular swimming area, and since the local officials were taking a lot of unnecessary chances handling ordnance, USAEDH judged that an imminent hazard existed. Teaming with Norfolk District, USAEDH expedited action and awarded a purchase order to UXB, International on September 24 to sweep a 3000 foot length by 300 foot width of beach to a depth of four feet. The surf zone was to be swept to three foot water depth at mean low tide. The work would be done in two phases, closing only one half the beach at a time.

The contractor finished the work plan on October 11 and mobilized on October 15. This first sweep lasted one week. Three 76-mm projectiles (dud-fired) were discovered at depths of 22 to 31 inches. They were recovered by the USAF Langley EOD. Ironically, the day after demobilization, Huntsville received a formal request for clearance from the City of Hampton.

Spring storms in 1992 washed more ordnance ashore and local EOD units recovered those few rounds. Huntsville prepared for another sweep, awarding a purchase order to UXB again on August 6, 1992. Work began September 7 and was completed by September 12. Ten live 76-mm projectiles were located along with 3 expended items, all at depths of two feet or greater and one item at 58 inches deep. All were transported off site by Navy EOD Detachment, Yorktown, VA. This sweep was again conducted in two phases, but security was a problem, with bathers constantly breaking into the exclusion zone during operations.

On April 9, 1993, UXB again mobilized for the third sweep. Fourteen ordnance items were located, consisting of 75 and 76-mm projectiles. All but one were transported from the site by Yorktown Navy EOD. A 76-mm projectile with mechanical time fuse was blown in place by the Navy EOD. This third sweep was completed on April 12. Each sweep was completed under purchase order agreement, thus costing less than \$25,000 each.

Camp Elliott

The former Camp Elliott, consisting of 19,000 acres, is located on the northeastern fringes of San Diego, California. It was used during WWII as a training center for infantry, tanks, and artillery. A large portion is now owned by the Navy and used as the Miramar Naval Air Station. The City of San Diego also owns a large portion of the former camp. The

City sold much of their acreage to a private developer, which began development of the Tierrasanta subdivision in the early 1980s. Two boys were killed in 1983 while playing with a 37-mm projectile they had found on the former firing range.

Since the site came under Corps of Engineers jurisdiction as a FUDS site, USAEDH became involved in the ensuing investigations and impact assessment. A Record of Decision was signed in August 1988 authorizing an ordnance cleanup of Tierrasanta. The cleanup contract was awarded in September 1990 and was completed in April 1994. Once Tierrasanta was underway, studies and assessments were done at the neighboring Mission Trails Regional Park, and clearance began there in 1992.

In the Tierrasanta community as of 2 May 1994, the contractor completed cleanup of the 1904 acres, recovered 1,065 high explosive (HE) items, 3,991 small arms items, and turned in 28,438 lbs. of OEW scrap. Over 171,000 lbs. of metallic scrap were also recovered. There were 51 detonations in place because the items were deemed too dangerous to move. Clearance cost was approximately \$11 million. At peak production, 24 UXO personnel and 138 other personnel were working at Tierrasanta.

The Mission Trails sweep is 23 percent complete (322 acres), with recovery of 205 HE items, 343 small arms items, 10,400 pounds of OEW scrap and 3000 pounds of metallic scrap. Five shells were blown in place. Clearance cost is expected to approach \$10 million.

A large variety of WWII projectiles and mortars have been located including many experimental rounds and fuzes.

There are many examples in this project of difficulties encountered during ordnance removals. Clearances had to be scheduled to avoid impacts on the Mesa mint plant and bird species such as the black-tailed gnatcatcher and least Bell's vireo. Over 700 rattlesnakes were moved as they were encountered during the clearance.

One of the most hazardous problems was bee avoidance. Individuals were stung weekly, one man 42 times on his face and neck.

Poison oak was very abundant, and dress-out for work in such areas was hot and bulky. Sweeps were done in poison oak areas in the cool mornings. Clothes, boots, saws, sweep instruments and all other equipment used in the area were decontaminated at the end of the workday.

One of the requirements of the project was to chip all the cleared brush. Movement of the brush chippers was time consuming and expensive. Since there are no roads in some areas, some moves took up to five people over a two-day period. The most used method for moving chippers into and out of canyons was a winch system made up of chain saw motors and an anchor.

The steep terrain was especially dangerous for chain saw operators on loose rocks or in wet conditions.

Many rounds were deemed too dangerous to move, and had to be blown in place. Some were located very close to houses, and protective works had to be built. Detailed planning was needed to ensure communications with the police, fire department, and the community.

During clearance operations, a pipe bomb was found approximately 20 feet from a house. The local HazMat team responded immediately to our call, and with the help of the

Corps of Engineers the bomb was quickly and efficiently rendered safe.

The condition of the rounds was unpredictable. Some were broken up on impact and others were in mint condition. All had to be considered deadly.

Tons of metal scrap had to be removed in order to ensure that all metallic anomalies could be detected. In addition to the contractor's clearance sweep, he was required to perform Quality Control sweeps over 10 percent of the swept area. The Corps of Engineers conducted a Quality Assurance sweep of as much of the project as possible, covering almost 50 percent of the Tierrasanta area.

Fort Sill, OK

From April through October of 1993, USAEDH executed an ordnance removal project at the Combined Artillery Live Fire Exercise Range (CALFEX) at Fort Sill. The installation had plans to insert targets for training purposes, but the range had been heavily used during the 1970s and was considered too hazardous for target insertion. The primary concern was for the submunitions that had been fired or dropped. These munitions are very hard to see in the terrain common at Fort Sill and have very sensitive firing mechanisms.

The area of concern was so large that active duty EOD had neither the personnel nor the time to support the installation. USAEDH was contacted, and accepted the mission of clearing all surface ordnance from 1322 acres of the CALFEX. This action would allow future target insertions by the installation without undue risk to their personnel.

To accomplish the work, Huntsville used their pre-placed indefinite delivery order time and materials contract with HFA, Incorporated. At peak operation, 25 personnel were involved in UXO operations, 9,637 items of ordnance were found and destroyed on site, and 361,413 pounds of metallic debris were removed from the range and turned in to Defense Reutilization and Marketing Office (DRMO). Cost of this surface clearance was \$1.63 million.

Many different types of ordnance were recovered during the surface sweep operations. Some of the munitions and submunitions were hard to see under the dense grass cover. During the spring, search areas were sprayed with herbicide to kill the vegetation, which was burned off after it was dry. During the summer only burning was required. Among the items found were M-39 submunitions, old style 500 pound bombs, a nuclear practice bomb. All ordnance items were destroyed in place. Some of the fillers were white phosphorus. Empty scrap ordnance was placed near grid stakes for movement to the staging area where a DRMO contractor removed it from the site.

Conclusion

Huntsville Division has conducted many other ordnance clearance actions in the brief history of the ordnance program. The five projects reviewed above are representative of conventional ordnance projects. Chemical warfare material (CWM) is a type of ordnance for which a programmatic approach is still being developed in conjunction with USACMDA. As CWM projects come to maturity, Huntsville Division will have more to report on those activi-

ties. Meanwhile, the Corps of Engineers has shown that it can respond professionally, appropriately, and quickly at sites where human lives are at risk.